CHARLES BABBAGE INSTITUTE
NEWSLETTER
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Charles Babbage Institute Annual Report for 1987-88

The 1987-88 year was the tenth anniversary of the Babbage activities. The first meeting of the advisory group, later the Charles Babbage Foundation Board, occurred in April 1978, and by fall, an active program had been initiated. All the elements of CBI's present archives development activity and fellowship program were present at that time. Since then, CBF has presided over an expansion into a full-scale archives program with a range of research and collecting projects, witnessed the addition of a strong interpretive research program, and praised the diligence of CBI in helping an increasing number of scholars to find resources for their work. CBF watched CBI grow from a small search-and-save activity into a substantial history and archives research center. During the last ten years, CBF provided a major portion of the funds for CBI with generous assistance from corporate and professional organizations and individuals. At the same time, the Board served as CBI's major policy advisor. It was a decade filled with accomplishment for both organizations.

This tenth anniversary year of the Foundation is a milestone year for the Institute as well. Work begun several years ago is reaching conclusion. For example, this year marks the third and final year for our National Collecting Strategy Program. Progress in this program has been gratifying. In the course of this program two archival guides were produced and a third is almost completed. A major bibliography for history of software appeared in *Annals of the History of Computing* this year and an historical survey on computer architecture as a model for appraisal in specified areas is forthcoming. And a number of meetings to discuss collecting issues have been held under CBI sponsorship. The major research projects on developments in scientific computing and the history of early industry in the United States have progressed to the stage that CBI can turn more of its attention to the later period of 1960 to 1980. In short, research programs are on schedule or completed and their results are beginning to appear in print.

As we look at the landscape around us, a number of our sister organizations around the world have substantial programs in the history of information processing as well. And it seems every year now a new group joins the list. The next five years will witness the appearance of several major exhibits and new books on various aspects of the subject. What started out a decade ago as an adventure into the unknown is now a substantial and self-reinforcing enterprise reaching out to colleagues in other areas of study and to the public. Ten years have made a great difference. In this report, however, as in those of the past few years, we emphasize only CBI's work of the past year.

RESEARCH PROGRAM

General Program

In the CBI general historical research program, several projects were brought to completion this year and we began to explore some new areas. First, a manuscript on developments in computer architecture was submitted for publication; it will appear in late 1988. This article contains an historical overview, written by Richard E. Smith while a graduate student employee of CBI.

Second, a volume on computing before 1945 edited by William Aspray, with contributions by Aspray, Allan Bromley, Paul Ceruzzi, Martin Campbell-Kelly, and Michael Williams, will also appear in late 1988. This will be an important contribution inasmuch as there is very little historical literature on this period.

Third, we continue to explore the role of government in the many areas of computing. CBI accessioned a major collection of NBS-assembled reports from the 1960s and 1970s; examined a significant quantity of NBS records for the 1940s and 1950s in the National Archives; and on the occasion of a conference as part of a project to write a history of the U.S. National Bureau of Standards, Aspray and Michael Gunderloy, of Rensselaer Polytechnic Institute, prepared a presentation on the history of NBS's involvement with computing.

Dedication

After more than 7 years of important and extremely valuable service to CBI and CBF, Ms. LaVonne Molde left CBI in the summer of 1988.

LaVonne Molde

When LaVonne joined CBI in February 1981, it was a small organization that had just located on the campus of the University of Minnesota. She was to "maintain records, provide office support, serve as an information source for inquiries about the Institute, help coordinate conferences sponsored by CBI, assist with the newsletter, and deal with the many unique and unanticipated situations likely to arise in a new organization." She did all that and more. LaVonne led us through the maze of budget analysis, printer's copy, conference coordination, telephone and computer system changes, and general administration of a growing organization. She was always there. Conferences ran better because of her. Publications bore the stamp of her care. Administration of CBI ran smoothly under her constant attention.

Now she has gone to another position within the University, which will demand all of these skills and more. We are confident she will continue to be a success. For all her achievements at and help to CBI, and her warmth while at CBI, we dedicate this issue of the *Newsletter* to LaVonne. She prepared the last eight volumes of the *Newsletter* and saw them through the press. And her style remains in this issue. We wish the best to our friend and colleague. ☐

Contributors to CBF and CBI During 1987-88

We would like to acknowledge and thank the following corporate and government agency contributors to CBF and CBI during the past year:

American Federation of Information
    Processing Societies
Intel
International Business Machines
National Endowment for the Humanities
National Historical Publications and
    Records Commission
National Science Foundation
Northern Telecom
Sterling Software
Unisys

We offer a special thanks to the University of Minnesota.

Major Contributors to the CBF and University of Minnesota Endowment Campaigns During 1987-88

Walter F. Bauer
James W. Birkenstock
Walter and Nancy Carlson
Willis and Mildred Drake
Tibor Fabian
Mina Rees
Erwin and Adelle Tomash

CHARLES BABBAGE INSTITUTE
NEWSLETTER

The Charles Babbage Institute, Center for the History of Information Processing, is sponsored by the University of Minnesota and the information processing community. Arthur L. Norberg, Director.

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Friends of CBI

CBI offers this special acknowledgement to the individuals listed below who support the programs of the Institute through their membership in the "Friends of CBI."

Sustaining Colleague Members: Mr. J. R. Woodhull.

Colleague Members: Mr. John E. Parker, Mr. Charles A. Zraket.

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And fourth, CBI did some exploratory work into the history of timesharing and artificial intelligence. Early timesharing project records at several sites were examined for their historical significance. Preliminary discussions were held with key people in both the histories of timesharing and artificial intelligence. CBI is considering development of a research project to examine the histories of these areas, especially the role of government in them.

Research Projects

(1) The History of the Computer as a Scientific Instrument.

The first phase of William Aspray's research project on the contributions of John von Neumann to computing and computer science is now complete. This work covers von Neumann's contributions to scientific computation, numerical analysis, and the theory of computation. This work, incorporated into three chapters, forms the basis for one half of a book to be published with the title *John von Neumann and the Origins of Modern Computing*. One chapter describes the contributions von Neumann made to numerical analysis as it was transformed by the introduction of the computer to drive the calculations. A second chapter describes von Neumann's contributions to the theory of automata, and accounts for their history in von Neumann's interest in biological information processing. A third chapter tells the story of von Neumann's most important project in scientific computation— the first successful numerical meteorology project—carried out under the direction of von Neumann and Jule Charney at the Institute for Advanced Study. Two papers culminating from this research have been accepted for publication in 1989: "The Transformation of Numerical Analysis by the Computer," in John McCleary and David E. Rowe, editors, *History of Modern Mathematics*; and "The Origins of John von Neumann's Theory of Automata," in James Glimm and John Impagliazzo, editors, *The Legacy of John von Neumann*.

Work on the second and last phase of the von Neumann project was just beginning as the year came to an end. A second grant from the National Science Foundation has been awarded to research and write about von Neumann's biography, and his design and construction of computers.

(2) An Investigation of the Origins of the Computer Industry in the United States.

The research for this investigation was essentially complete at the end of calendar year 1987. Examination of over a dozen records collections, including the exceptionally large holdings on Sperry (Unisys) at the Hagley Museum and Library and at several locations of the Unisys Corporation, and interviews with over two dozen persons associated with

Engineering Research Associates (ERA), Inc., and Eckert-Mauchly Computer Company (EMCC) had been conducted. During the last year, preparation continued of a book-length manuscript on the history of ERA and EMCC as new engineering companies after world war two and as divisions within Remington Rand after they were purchased. This analysis of the two firms will be put into the context of other firms active in the period from 1946 to 1957. This analysis will also be used to explore the role of the government in the development of computers in this period. Work on the manuscript will continue in the coming year.

A spinoff of this work is an article on the rise of the tabulator industry in the United States, to be submitted for publication in summer 1988. Three areas are explored and linked in this study. One is the introduction of a new tabulating mechanism to the United States Census of 1890; a second is the rise of companies to manufacture, modify, and market these machines and techniques; the third is the many and different applications from business accounting and reporting. These histories are used to explore three characteristics of the tabulator era: the dominant role played by Hollerith (IBM) and Powers (Remington Rand); the government as stimulator of the technology and principal purchaser; and the growing needs of business and their drive for greater mechanization. These three characteristics are analogous to characteristics of the later computer activity.

ARCHIVES PROGRAM

NHPRC Research Project

With a grant awarded by the National Historical Publications and Records Commission (NHPRC) and cooperation given by the Control Data Corporation (CDC), CBI conducted research aimed at improving the selection and appraisal of historically valuable business records in high-technology industries. We have often stressed the necessity for strong links between historical research and archival development. This was never more apparent than in this project. The foundation for the CBI study was an analysis of selected activities of the CDC: the development of the 1604 computer, the development of the PLATO computer-based education system, and the acquisition of C-E-I-R, Inc., an early computer service bureau company. The selection of these three activities was designed to provide a sampling of different industrial activities over time, as well as a cross-section of markets (e.g., mainframes, terminals, computer services, industrial education, software). Since Control Data moved from an entrepreneurial business to a large corporation within the time

that spanned the three activities, these investigations allowed us to compare research and development, marketing, sales, planning, and other industrial activities at different points in a company's growth. This analysis also provided information about changes in records associated with those activities, which proved helpful in making comments about the appraisal of business records in general.

The foremost goal of the study was the development of appraisal criteria transferable to the widest possible range of high-technology business-related collections. We used our analysis of industrial activities in the computer industry as the starting point for a more general description of activities in high-technology industry. A second goal of the study was to determine the value of alternative sources of historical information when corporate records are unavailable. A third goal was to assess the effectiveness in an industrial environment of one aspect, documentary probes, of the "documentation strategy" approach to appraisal. Through documentary probes we wanted to capture the range of documentation associated with the development of software, hardware, and computer services.

The research for this project, jointly done by an archivist and an historian employed by CBI, was carried out during the year. The findings of the study will be contained in a guide to documenting high-technology industries, expected to be distributed at the end of 1988. It will describe the environment of high-technology industry by means of a model of industrial activity, and will describe a tactic for understanding the scope of documentation within a business by the use of documentary probes. The guide will be useful to archivists who are interested in documenting high-technology firms, historians whose research involves high-technology industry, and business people who are interested in preserving an adequate record of their firm's history.

Guide to United States and Canadian Manuscripts

This year CBI published *Resources for the History of Computing: A Guide to U.S. and Canadian Records*. The guide, the first compilation of archival resources relating to the history of computing, includes more than 350 entries from academic, corporate, state, private, and government repositories. This is the second of three guides published as part of CBI's National Collecting Strategy program. The other two are *Guide to the Oral History Collection of the Charles Babbage Institute* (1986) and the forthcoming guide to appraising high-technology industry records.

Archives Development

CBI registered 36 separate accessions for a total of 108 cubic feet. These acquisitions include the Herbert Bright papers, the Daniel

International Meeting on History of Computing Sponsored

Over the past five years there has been a notable increase around the world in interest and research on the history of computing and information processing. This opens up many new opportunities, but also creates problems in disseminating information about available archival sources and ongoing research projects. With this in mind, Arthur Norberg and Geoffrey Tweedale, directors of the Charles Babbage Institute and the (British) National Archive for History of Computing, convened a meeting for those interested in history of computing to exchange views, learn about other projects, and meet others active in the field. The meeting was held at the University in Manchester, England on July 15, 1988, in conjunction with the first joint meeting of the (U.S.) History of Science Society and the British Society for History of Science. Twenty-five people from England, Italy, the Netherlands, Norway, Scotland, the United States, and West Germany attended the meeting.

The day's activities began with a well-received talk from Dai Edwards, Professor of Computer Science at Manchester University and member of the Manchester Mark I design team, who described early Manchester computing activities in honor of the fortieth anniversary of the first Manchester computer.

The remainder of the morning and the first part of the afternoon session were taken up with short talks describing the resources for historical study and research programs of the most well-established organizations. Geoffrey Tweedale described the holdings and collecting plans of the recently established National Archive for History of Computing. William Aspray and Arthur Norberg discussed the archival and historical programs of the Charles Babbage Institute. Gordon Collinson gave an overview of the rich collections in the ICL Archives. Ralf Buelow surveyed archival collections and research programs in West Germany, with a particular emphasis on the work at his home institution, the Deutsches Museum. Eda Kranakis reviewed historical resources in the Netherlands, and described her own project to write a history of early computing in the Netherlands.

The remainder of the afternoon was devoted to a round-table discussion of computer history and its future prospects. Others attendees had the opportunity to describe their own projects and interests, allowing us to learn, for example, about the work underway in Italy and Scotland, and within the British computer industry.

A photo of IBM Systems and Methods Analyst Eileen O'Connor demonstrating election night procedures to Walter Conkite, from an IBM brochure released before the 1960 election. All three networks squared off with different systems: CBS went with an IBM 7090 and RAMAC, ABC with an UNIVAC I, and NBC used the parent company's RCA 501. In an interview with CBI staff, Jack Moshman reported that C-E-I-R (his employer) was hired by NBC to help with the prediction and anlysis of the election. Using Moshman's analysis, NBC was the only network to consistently call for Kennedy's election over Nixon.

CBI Acquisitions 1987-88

Archibald, Dale.
Computer Serials, 1978-1987 (ca.).
3 cubic ft.

Anonymous.
Computer literature, ca. 1970-1983.
0.5 cubic ft.

Bright, Lee E. M. Herbert Bright.
Papers, ca. 1958-1980.
1.3 cubic ft.

Burks, Arthur.
Honeywell vs. Sperry Rand — Mauchly
Deposition, 1971.
0.25 cubic ft.

Champine, George.
Gene Amdahl Lecture, 1975.
2 cassettes.

Feldheim, Shar.
Twin Cities Osborne Group. Publications,
1981-1988.
1.5 cubic ft.

Foster, Caxton.
Computer Literature, ca. 1960-1975.
1 cubic ft.

Fox, Margaret.
Papers, ca. 1938-1976.
6 cubic ft.

Hamblen, John W.
Papers, 1960s-1970s.
1.5 cubic ft.

Hammer, Carl.
Papers, 1973-1986.
2.3 cubic ft.

Honeywell Bull.
General Electric Corporation. Computer Department Scrapbook [copy], 1956-1970.
0.3 cubic ft.

Honeywell Bull.
Manufacturing Competence [film], ca. 1960.

Hovey, Robert.
Remark .
1 cubic ft.

Todd, John.
John H. Curtiss, "The Program of a Large
Computation Center," 1950.

Lundstrom, David.
Control Data Corporation. PLATO literature.
0.2 cubic ft.

McCracken, Daniel D.
Papers, 1950-1982.
13 cubic ft.

Mendelson, Jerry.
MADDIDA Papers, 1950s.

Minker, Jack.
Association for Computing Machinery 1967
Conference. Historical Session. Tapes and
transcript, 1967.

National Bureau of Standards.
Computer Literature, 1948-1980.
13 cubic ft.

Neumann, Mrs. Albrecht J.
Computer literature, 1950-1975 (ca.).
22 cubic ft.

Petterson, Bill.
General Electric. Computer Department.
Newsletters, 1958-1966.
1 folder.

Platzman, George.
University of Chicago. Department of
Meteorology. Numerical Meteorology
Analysis Survey, 1955-1956.
0.1 cubic ft.

Sherman, Jack.
Simulation Council Newsletter, 1952-1963.
0.2 cubic ft.

State University of New York, Buffalo.
Computer literature, 1960s-1970s.
4 cubic ft.

Tebo, Julian D.
"The Beginnings of Modern Digital Computers and the Origin of the Association for
Computing Machinery (ACM)", 1988?. 4 pp.

U.S. Dept. of Transportation (Thomas Kurihara).
Computer Surveys, ca. 1968-1978.
8 cubic ft.

Unisys Corporation.
Computer Literature, 1970s-1980s.
22.5 cubic ft.

Unisys Defense Systems.
Computer Literature—Manuals. 1970s-1980s.
4.25 cubic ft.

University Film and Video.
Computers and Human Behavior [film], n.d.

University of Massachusetts.
Computer Literature, 1960s-1970s.
2.2 cubic ft.

Weisbard, Michael F.
Computer Literature, 1960-1977.
0.25 cubic ft.

Weiss, Eric.
Computer Literature, ca. 1955-1965.
0.5 cubic ft.

The meeting was effective at reaching its objectives. This was the first opportunity not only for the Americans to meet many of their European colleagues, but also for the Europeans to meet one another. It was decided that these meetings should continue, and plans are being formed for another meeting next summer. For further information about these plans, contact Dr. Geoffrey Tweedale, National Archive for History of Computing, STP, Mathematics Tower, The University, Manchester M13 9PL, England. □

McCracken papers, and the Margaret Fox papers. Additions were received to the NBS Computer Literature collection and the Carl Hammer papers. Nine oral histories were accessioned. A list of accessions can be found in another section of this *Newsletter*.

Processing

Processing this year was aimed at large collections. These include the Auerbach Records, the Computer and Communications Industry Association Antitrust (CCIA) Records, the NBS Computer Literature Collection, and CODASYL Records. A list of all the reports in the Auerbach Records was made in order to facilitate contact with the corporations for whom the reports were originally done to request permission to make the reports publically available for research. The list will be the basis for a finding aid to the collection.

A cross index to the US vs. IBM part of the CCIA collection was produced; we can now locate any document by exhibit number. At the end of the year, about one quarter of the exhibit and depositions had been described for inclusion in a finding aid to the collection. This collection is about 55% processed. This processing project is a cooperative venture with the Hagley Museum and Library, which also has a set of these materials. The objective of this joint work is to ensure that as complete a CCIA collection as possible exists at both institutions.

The NBS collection consists of about 169 cartons of reports. The contents of approximately 105 of these cartons were indexed during the year. CBI will use a keyword-in-context-index program on this index to produce a guide to provide some subject access. The CODASYL records and the SHARE collection were organized as well.

COMMUNITY PROGRAM

Meetings

This year CBI continued its outreach to the European community by planning, in conjunction with the (U.K.) National Computing Archive, a meeting of our international colleagues in Manchester this July. Interaction with the academic and professional communities in the United States continued to occur frequently through the participation of staff in conferences and meetings. This year major presentations were given again at the Society of American Archivists annual meeting, the annual meeting of the History of Science Society and the Society for the History of Technology. Papers were also prepared for the joint meeting in July 1988 of the (U.S.) History of Science Society and the British Society for the History of Science. In addition,

CBI staff continued teaching at the University of Minnesota by offering graduate-level courses in the history of technology.

CBI and the Smithsonian Institution's National Museum of American History conducted a joint meeting in the fall of 1987. In a research conference setting, historians from fields of technology, business, and economics, and sociologists discussed similarities and differences of their research activities to those of the history of information processing.

Editorial Activity

CBI's involvement in publication remains strong. Besides publication of the quarterly newsletter, CBI staff contribute to the CBI Reprint Series, the MIT Press History of Computing Series, the *Annals of the History of Computing*, and *Technology and Culture*.

Fellowship

The Adelle and Erwin Tomash Predoctoral Fellowship for 1988-89 was awarded to Shane Mitchell Greenstein, a graduate student in the Department of Economics at Stanford University. He is writing a dissertation on "Computers, Compatibility, and Economic Choice." The dissertation will contain an economic analysis of U.S. federal government agency computer system supplier choice, focusing on the importance of previous user experience with computer system suppliers in shaping computer technology choice. It will be primarily concerned with the empirical question of economic importance: did the costs of switching between suppliers of (potentially) incompatible equipment significantly affect a buyer's choice of system supplier in practice in the 1970s? The dissertation addresses a number of issues of interest to the history of computing. It will investigate the role of switching costs in the development of computer markets. It will illuminate the processes of government computer use and selection. And it is hoped that it will stimulate further economic research into the relevance of historical processes for the development of markets of networks of technically interrelated components, such as computer systems (e.g., of how buyer incentives to continue with compatible technologies shapes the design of technically complex systems).

OBJECTIVES FOR 1988-89

CBI continues to focus on its main mission to:

- engage in historical research to foster greater understanding of significant events in information processing, and

- identify and preserve the significant records associated with this field.

Hagley Museum and Library Announces Fellowships for 1989-1990

Advanced Research Fellowships, Dissertation Fellowships, and Grants-in-Aid are available to scholars for 1989-90.

The Advanced Research Fellowships are for scholars working in the humanities or in those aspects of the social sciences that employ historical or philosophical approaches. The fellowships are restricted to individuals pursuing advanced research; awards will not be made to degree candidates or to persons seeking support for work leading to a degree. Applicants must be American citizens or have been a resident in the United States for three years immediately preceding the term of the fellowship. Fellowships are offered for six to twelve months' work with a maximum stipend of $27,500. Completed applications must be received by 15 February 1989; awards will be announced by 1 April 1989.

Two types of Dissertation Fellowships are available to support doctoral work in the topical fields of Hagley's research and collecting interests: business, economic, and technological history in their social contexts. Regional Dissertation Fellowships include a stipend of $12,500. The Residential Dissertation Fellowship provides a stipend of $13,500. Completed applications must be received by 15 February 1989; awards will be announced by 1 April 1989.

Grants-in-Aid provide short-term support (two to eight weeks) for research in Hagley's imprint, manuscript, pictorial, and artifact collections. Applications will be accepted throughout the year; awards in 1989 will not exceed $750 per month of study.

For additional information please write Executive Administrator, Center for the History of Business, Technology, and Society, Hagley Museum and Library, P.O. Box 3630, Wilmington, Delaware 19807 U.S.A. ☐

In 1988-89 CBI objectives, consistent with this mission, will be to:

- continue research in its two main research projects and write a substantial portion of two books on these topics,

- conduct research on computing in the 1960s and 1970s,

- intensify archives collecting efforts, and

- complete and publish the guide to high-technology industrial records. ☐

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BELMONT,   MA
                           02178

Address Correction Requested